

Fire Test Report

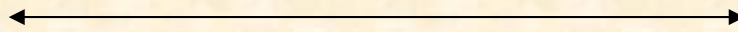
ANSI/API Standard 607, Sixth Edition, 2010

ISO 10497:2010

Performed for

ValvTechnologies, Inc.

www.valv.com



6 inch Class 600 Metal-Seated Ball Valve
Product Code: V6CC-RF-FP-B060-011DB-001

Project Number: 211088

Test Date: July 21, 2011

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
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Yarmouth Research and Technology, LLC

Customer: ValvTechnologies Inc.

Date: 7/21/2011

Specification: ANSI/API Standard 607, Sixth Edition, 2010

ISO 10497: 2010

Product Description: 6 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Comments: Product Code: V6CC-RF-FP-B060-011DB-001

Yarmouth Engineer: Matthew J. Wasielewski, P.E.

Equipment Confirmed to be in Calibration to NIST Standards: Yes

Burn and Cool Down Test

Burn Start Time:	12:55:00	
Average Pressure During Burn:	1111	psig
Seat Leak Rate During Burn:	1650	ml/min
Allowable Seat Leak Rate:	2400	ml/min
External Leak Rate During Burn/Cool Down:	12	ml/min
Allowable External Leak Rate:	600	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	25.5	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Post-burn Test

Average Pressure During Test:	31	psig
Seat Leak Rate:	0	ml/min
Allowable Seat Leak Rate:	240	ml/min
Was the Leakage Below the Allowable?	Yes	

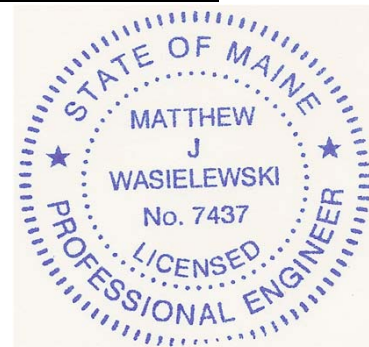
Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	1100	psig
External Leak Rate After Operating:	0	ml/min
Allowable External Leak Rate:	150	ml/min
Was the Leakage Below the Allowable?	Yes	

Valve Pass or Fail the Test Standard?	PASS
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Witnesses

Matthew J. Wasielewski



YARMOUTH RESEARCH AND TECHNOLOGY

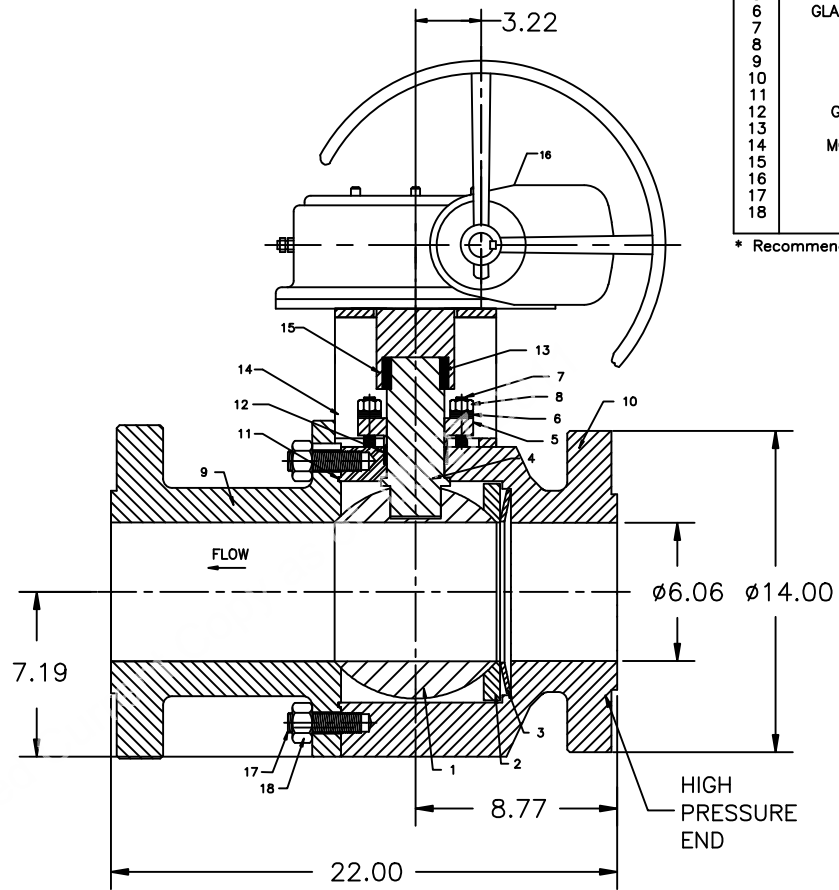
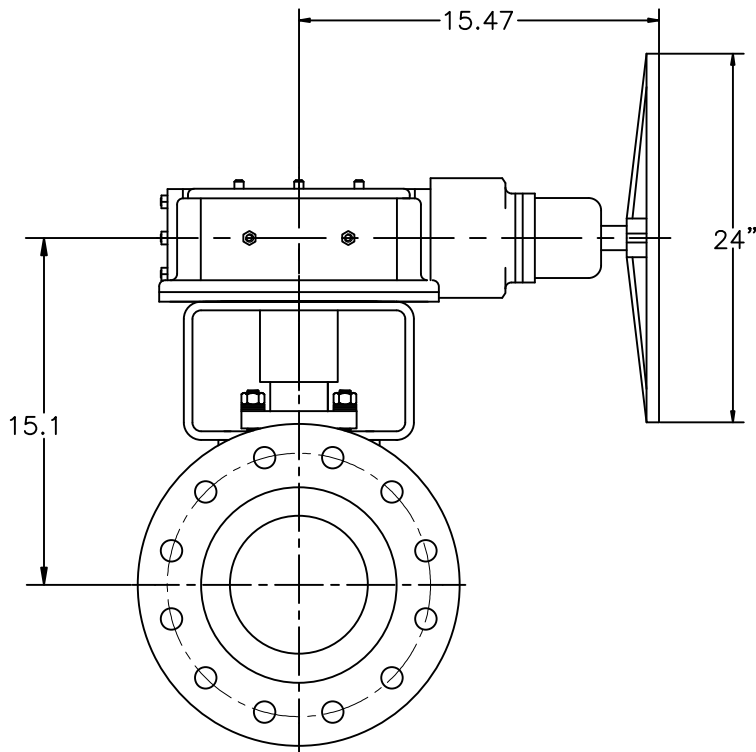
Fire Test Information Sheet

Valve Manufacturer's Name:	ValvTechnologies, Inc.
Valve Manufacturer's Address:	5904 Bingle Road Houston, Texas 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	V6CC-RF-FP-B060-011DB-001
Valve Description	Size: 6" Pressure Rating: 600# Pressure Rating at 100F: 1480 psig Type: Ball Valve Weight: 855 lbs. Reduced or Full Bore: Full Port Body/Bonnet Material: A105 Trim Material: 316SS/QPQ Seat Material: 316SS/QPQ Stem / Body Seal Material: 316SS/QPQ / Grafoil Bolting Material: B7/2H Is valve considered "Soft-Seated"? No
Valve Markings	Nameplate Information: Size, Pressure Class Casting Markings: N/A
Assembly Drawing Number / Revision / Date of Issue:	110585-1 / Rev. 1 05/25/11
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco IW-6/420 Mech. Adv. 132
If valve is non-symmetric, state direction of flow for test:	See flow direction as indicated on drawing.
For double-seated valves, state maximum allowable cavity pressure:	N/A
Manufacturer's Contact Name /Date:	Becky Kowen / 07/21/11

CUSTOMER: ValvTechnologies
 PROJECT NAME: Fire Safe Certification for 110204

BILL OF MATERIAL			
ITEM	DESCRIPTION	MATERIAL	QTY.
1	BALL	A182 316H/RAM31	1*
2	UPSTREAM SEAT	A182 316H/QPQ	1*
3	BELLEVILLE SPRING	17-4	1*
4	STEM	A182 316H/QPQ	1
5	GLAND	A182 316H/QPQ	1
6	GLAND LOAD SPRING	Inc. 718	24
7	GLAND STUD	A193 Gr. 8M	4
8	GLAND NUT	A194 Gr. 8M	4
9	END CAP	A105/RAM31	1*
10	BODY	A105	1
11	BODY GASKET	GRAFOIL	1*
12	GLAND PACKING	316 S.S./GRAFOIL	1*
13	KEY	1018	1
14	MOUNTING PLATE	STEEL	1
15	DRIVE SLEEVE	STEEL	1
16	OPERATOR	EXEECO IW-6/420	1
17	BODY STUD	A193 Gr. B7	8
18	BODY NUT	A194 Gr. 2H	8

* Recommended Spare Parts

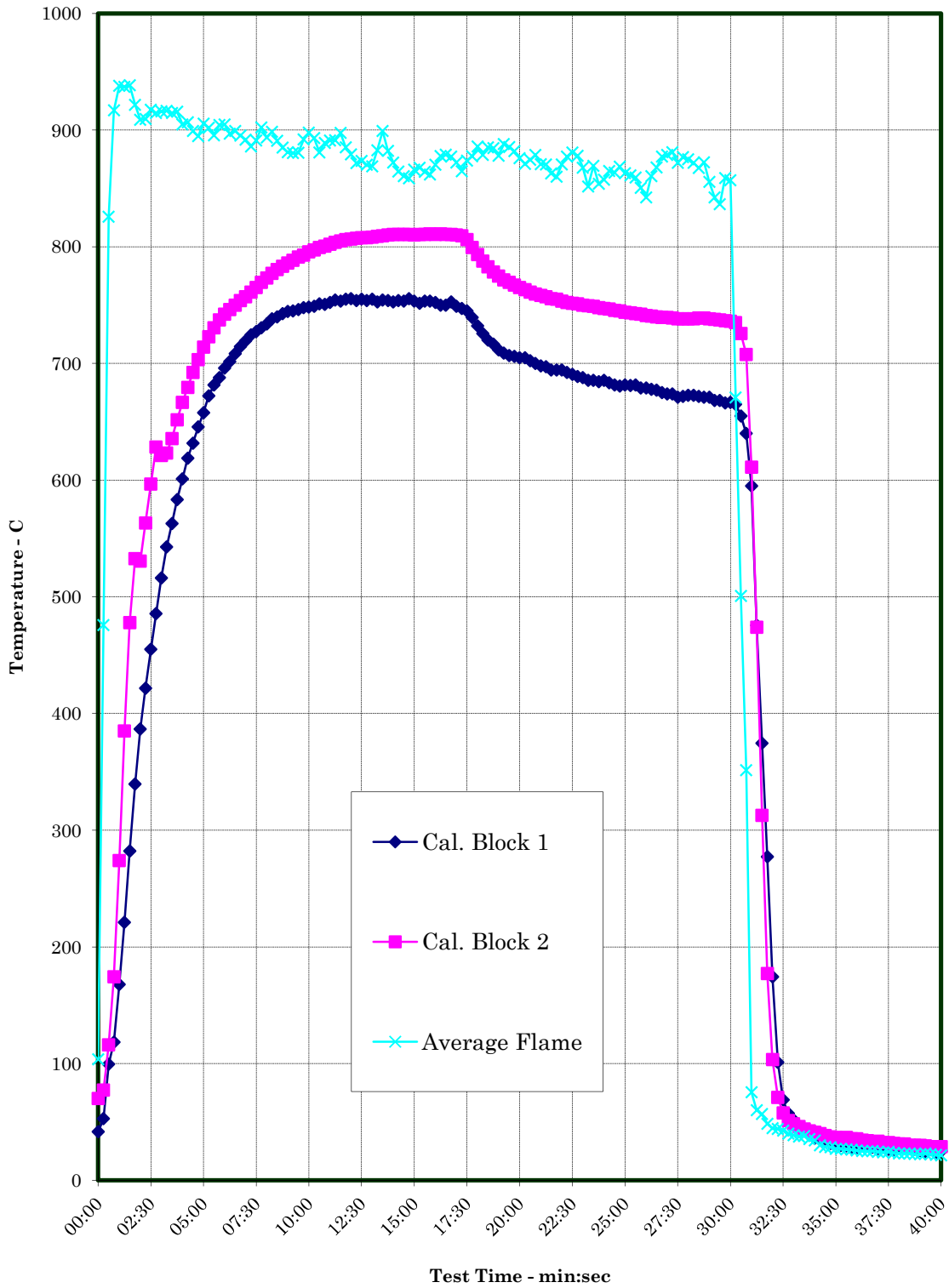


APPROX. VALVE WEIGHT: 670 lbs
 APPROX. ACTUATOR WEIGHT: 185 lbs
 APPROX. TOTAL WEIGHT: 855 lbs

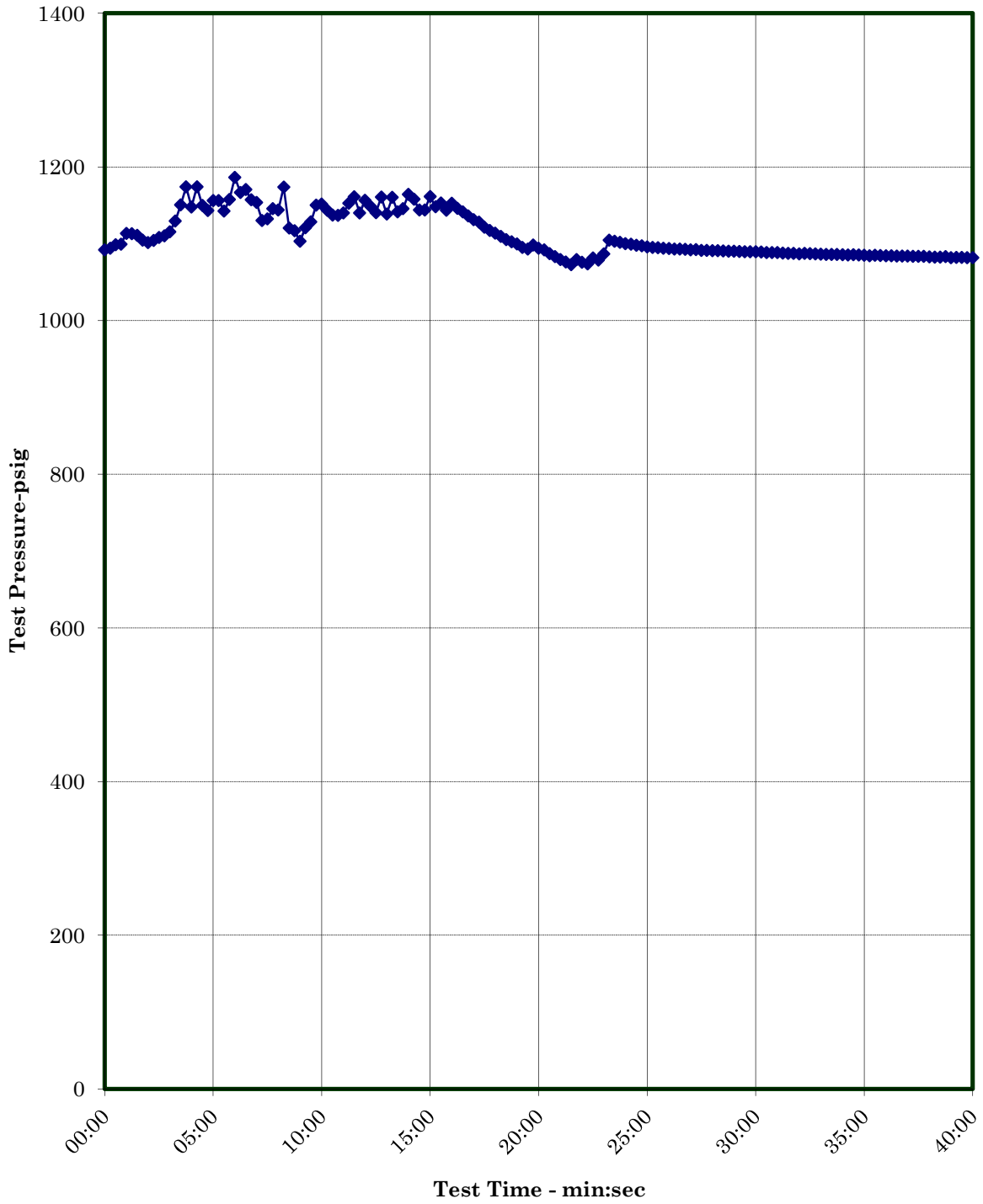
**Release For Customer Approval

<p>THIRD ANGLE PROJECTION</p>	-	-	-	-	-	-	-	DIMENSIONS ARE IN INCHES REMOVE BURRS AND BREAK EDGES UNLESS OTHERWISE SPECIFIED	SCALE	MODEL FILE	SIZE					
	-	-	-	-	-	-	-		NTS	-	B					
THIS DRAWING AND THE INFORMATION CONTAINED WITHIN IS CONSIDERED TO BE CONFIDENTIAL AND THE SOLE PROPERTY OF VALVTECHNOLOGIES. THE CONTENTS OF THIS DRAWING MAY NOT BE REPRODUCED OR DISCLOSED VERBALLY OR OTHERWISE OUTSIDE THE HOLDERS OFFICE WITHOUT THE WRITTEN APPROVAL OF VALVTECHNOLOGIES.	1	05/25/11	ADDED TOTAL WEIGHT	-	PN	RSL	CWF	CORNER RADII - .X= ± .XX= ± .XXX= ± CONCENTRICITY - ANGULAR ± SURFACE TEXTURE - MIN. INTERNAL FILLETS -	COATING	-	-	5904 BINGLE ROAD, HOUSTON TEXAS 77092 PH: (713) 860-0400 FAX: (713) 860-0499				
	REV	DATE	DESCRIPTION	ECN	BY	CHK	APR		DRAWN BY	MS	DATE		05/17/11	TITLE V6CC-RF-FP-B060-011DB-001, ANSI 600# W/ EXEECO IW-6/420 W/24 INCH HW		
										APPROVED BY	CWF	DATE	05/18/11	110585-1	REV.	1

Temperature verses Time Chart



Pressure verses Time Chart



Yarmouth Research and Technology, LLC



Valve Prior to Test



Valve During Burn
(Torches not fully on)

Yarmouth Research and Technology, LLC

Fire Test Information

Customer: ValvTechnologies Inc.

Date: 7/21/2011

Product Code: 6 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Fire Test Raw Data

Time (EST)	Pressure (psig)	Water Volume (mls)	Cal. Block 1 Temp-C	Cal. Block 2 Temp-C	Avg. Cal Block Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
12:55:00	1092	100584	42	70	56	48	159	104
12:55:15	1094	100550	53	77	65	295	657	476
12:55:30	1099	100564	99	116	108	731	921	826
12:55:45	1099	100548	118	174	146	864	969	917
12:56:00	1114	100514	168	274	221	901	975	938
12:56:15	1113	100532	221	385	303	898	976	937
12:56:30	1111	100534	282	478	380	901	976	938
12:56:45	1105	100496	339	533	436	869	974	922
12:57:00	1102	100524	387	531	459	849	968	909
12:57:15	1104	100526	422	563	493	855	964	909
12:57:30	1108	100486	455	597	526	847	988	918
12:57:45	1110	100500	486	628	557	832	997	915
12:58:00	1115	100534	516	621	569	834	998	916
12:58:15	1130	100554	543	623	583	837	996	916
12:58:30	1151	100550	563	636	599	836	993	915
12:58:45	1174	100502	583	652	618	839	992	916
12:59:00	1148	100458	601	667	634	818	991	905
12:59:15	1174	100500	619	679	649	820	993	907
12:59:30	1150	100532	632	692	662	813	985	899
12:59:45	1143	100502	646	703	674	804	986	895
13:00:00	1156	100510	658	714	686	822	989	906
13:00:15	1156	100492	672	723	698	821	983	902
13:00:30	1142	100540	682	731	706	808	983	896
13:00:45	1158	100506	688	737	713	817	992	904
13:01:00	1186	100504	696	742	719	823	987	905
13:01:15	1167	100502	702	746	724	807	987	897
13:01:30	1171	100512	708	750	729	812	986	899
13:01:45	1157	100494	714	754	734	808	983	895
13:02:00	1154	100476	719	757	738	801	982	892
13:02:15	1130	100510	724	761	743	792	980	886
13:02:30	1132	100512	727	765	746	793	989	891
13:02:45	1146	100528	731	769	750	818	987	902
13:03:00	1144	100550	734	773	754	811	977	894

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Fire Test Data - continued

13:03:15	1174	100486	738	777	758	814	983	899
13:03:30	1120	100510	740	781	760	807	975	891
13:03:45	1117	100520	743	783	763	795	975	885
13:04:00	1103	100466	744	786	765	788	974	881
13:04:15	1121	98560	745	788	767	785	976	880
13:04:30	1128	98494	746	791	769	787	974	881
13:04:45	1150	98626	748	793	770	804	979	892
13:05:00	1152	97130	748	796	772	812	984	898
13:05:15	1144	95334	749	797	773	802	984	893
13:05:30	1137	95590	751	799	775	787	975	881
13:05:45	1137	94398	751	801	776	796	982	889
13:06:00	1140	93420	752	802	777	802	980	891
13:06:15	1153	91428	754	804	779	804	979	891
13:06:30	1161	91810	753	805	779	809	986	898
13:06:45	1140	95344	755	806	781	791	980	885
13:07:00	1156	94056	756	807	781	783	976	879
13:07:15	1148	95360	754	807	781	773	971	872
13:07:30	1140	94320	755	808	781	772	975	874
13:07:45	1161	93352	754	808	781	768	972	870
13:08:00	1139	93856	755	808	782	763	974	869
13:08:15	1160	92632	753	809	781	782	984	883
13:08:30	1141	92462	754	809	782	818	981	899
13:08:45	1146	92978	754	810	782	791	973	882
13:09:00	1164	92280	753	811	782	776	969	872
13:09:15	1158	80760	754	811	782	764	964	864
13:09:30	1144	74886	753	811	782	753	968	861
13:09:45	1144	73646	756	811	783	748	969	859
13:10:00	1162	74568	753	810	782	761	971	866
13:10:15	1148	73208	752	811	781	768	968	868
13:10:30	1153	73372	753	811	782	756	972	864
13:10:45	1143	73124	753	811	782	758	966	862
13:11:00	1153	70420	752	811	781	771	969	870
13:11:15	1146	72176	750	811	781	777	978	878
13:11:30	1141	70208	750	811	780	788	970	879
13:11:45	1136	69002	753	811	782	787	967	877
13:12:00	1131	66630	749	810	779	776	968	872
13:12:15	1128	63336	747	809	778	764	966	865
13:12:30	1121	64266	745	806	776	794	953	874
13:12:45	1117	63108	739	799	769	814	941	878
13:13:00	1114	61052	732	793	763	832	939	886
13:13:15	1110	60678	726	788	757	818	939	879
13:13:30	1106	59138	720	783	751	823	947	885
13:13:45	1102	57202	717	778	748	818	951	884

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Fire Test Data - continued

13:14:00	1100	54882	712	775	743	814	942	878
13:14:15	1095	56100	709	772	740	828	948	888
13:14:30	1093	52514	707	769	738	826	945	886
13:14:45	1098	53208	706	767	737	818	946	882
13:15:00	1094	52746	705	765	735	804	947	876
13:15:15	1092	50214	705	763	734	794	948	871
13:15:30	1087	52372	702	761	732	808	941	874
13:15:45	1083	52256	700	759	730	814	943	879
13:16:00	1080	51268	698	758	728	796	946	871
13:16:15	1076	51400	697	757	727	800	941	871
13:16:30	1073	51396	694	756	725	784	942	863
13:16:45	1079	50166	694	755	725	777	943	860
13:17:00	1076	51378	694	753	724	795	946	871
13:17:15	1074	51302	692	752	722	811	944	877
13:17:30	1082	51356	691	752	721	817	945	881
13:17:45	1079	51266	689	751	720	812	944	878
13:18:00	1087	51208	688	750	719	796	939	868
13:18:15	1105	51280	686	749	718	764	939	852
13:18:30	1103	51280	686	749	717	798	941	869
13:18:45	1102	51236	684	748	716	768	940	854
13:19:00	1100	51276	686	747	716	768	947	858
13:19:15	1099	51258	683	747	715	787	943	865
13:19:30	1098	51172	682	746	714	782	945	864
13:19:45	1097	51360	681	745	713	786	952	869
13:20:00	1096	51238	682	744	713	778	948	863
13:20:15	1095	51212	681	743	712	775	947	861
13:20:30	1095	51314	682	743	712	773	946	859
13:20:45	1094	51246	679	742	711	757	944	851
13:21:00	1094	51342	679	741	710	739	945	842
13:21:15	1093	51354	678	741	709	774	947	861
13:21:30	1093	51268	677	740	709	787	949	868
13:21:45	1093	51344	675	739	707	812	942	877
13:22:00	1092	51416	674	739	707	812	946	879
13:22:15	1092	51272	674	739	706	813	949	881
13:22:30	1091	51232	671	738	705	797	947	872
13:22:45	1091	51374	672	738	705	806	948	877
13:23:00	1091	51326	673	738	706	806	944	875
13:23:15	1091	51254	673	738	706	803	941	872
13:23:30	1091	51376	672	739	705	797	938	868
13:23:45	1090	51288	671	739	705	802	943	873
13:24:00	1090	51328	671	738	705	765	946	856
13:24:15	1090	51302	668	738	703	740	944	842
13:24:30	1090	51302	668	737	703	731	942	836

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Fire Test Data - continued

13:24:45	1089	51330	666	737	701	773	945	859
13:25:00	1090	51240	667	736	701	769	944	857
13:25:15	1089	51320	665	735	700	631	711	671
13:25:30	1089	51332	655	726	690	487	514	501
13:25:45	1089	51398	640	708	674	378	324	351
13:26:00	1089	51274	595	611	603	86	66	76
13:26:15	1088	51246	476	474	475	64	56	60
13:26:30	1087	51246	374	313	344	66	48	57
13:26:45	1087	51356	277	177	227	53	43	48
13:27:00	1087	51420	174	103	139	49	41	45
13:27:15	1087	51322	101	71	86	48	39	44
13:27:30	1087	51204	69	58	63	47	38	43
13:27:45	1087	51102	57	51	54	43	37	40
13:28:00	1086	51082	52	48	50	41	37	39
13:28:15	1086	51238	45	46	46	40	35	38
13:28:30	1086	51116	43	44	43	42	34	38
13:28:45	1086	51170	39	42	41	38	33	35
13:29:00	1086	51272	36	41	39	36	32	34
13:29:15	1085	51078	37	40	38	28	32	30
13:29:30	1086	51072	34	38	36	27	30	29
13:29:45	1085	51080	32	37	34	26	31	28
13:30:00	1085	51048	32	37	34	25	29	27
13:30:15	1084	51046	30	36	33	24	29	27
13:30:30	1085	51004	29	37	33	24	29	26
13:30:45	1085	50874	28	36	32	23	29	26
13:31:00	1084	50946	28	36	32	23	28	26
13:31:15	1084	50926	29	34	32	23	27	25
13:31:30	1084	50890	30	34	32	22	27	25
13:31:45	1084	50858	28	33	31	23	27	25
13:32:00	1084	50814	27	33	30	22	27	24
13:32:15	1084	50840	29	32	31	21	27	24
13:32:30	1084	50834	27	32	29	22	27	24
13:32:45	1084	50782	26	32	29	21	26	23
13:33:00	1083	50700	28	31	29	21	26	23
13:33:15	1083	50778	28	31	29	21	26	23
13:33:30	1082	50644	28	30	29	21	25	23
13:33:45	1083	50652	27	30	28	21	24	23
13:34:00	1082	50672	26	30	28	20	24	22
13:34:15	1082	50660	24	29	27	21	26	23
13:34:30	1082	50664	26	29	28	20	24	22
13:34:45	1082	50616	23	29	26	19	24	22
13:35:00	1082	50606	25	29	27	19	24	21

Yarmouth Research and Technology, LLC

Leakage Summary for Burn and Cool Down Periods

All pressure transducers and thermocouples are in calibration per YRT's QA program.
Seat leakages were collected manually. External leakage was collected electronically.

Total Through Seat Leakage Collected Over 30 Minute Duration:	49500	mls
Average Leak Rate Over 30 Minute Duration:	1650	ml/min
Allowable Leak Rate:	2400	ml/min

Total Through Seat Leakage Collected Over 10 Minute Cool Down:	0	mls
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Total Water Volume Lost Over 40 Minute Burn and Cool Down:	49978	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	478	mls
Average Leak Rate Over 40 Minute Duration:	12	ml/min
Allowable Leak Rate:	600	ml/min

Were the Valve Leakages Below the Allowables?	Yes
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Yarmouth Research and Technology, LLC

Summary of Test Parameters During Burn and Cool Down Periods

Amount of Time Pressure Dropped Below 50%:	0.0	minutes
Maximum Allowable Low Pressure Time:	2.0	minutes
Maximum Pressure During Burn/Cool Down:	1186	psig
Average Pressure During Burn/Cool Down:	1111	psig
Minimum Pressure During Burn/Cool Down:	1073	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	25.5	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	783	deg. C
Average Cal Block Temperature:	551	deg. C
Lowest Avg Cal. Block Temperature:	26	deg. C
Maximum Body Flame Temperature During Burn:	998	deg. C
Average Body Flame Temperature During Burn:	955	deg. C
Maximum Bonnet Flame Temperature During Burn:	901	deg. C
Average Bonnet Flame Temperature During Burn:	791	deg. C
Average of Both Flame Temperatures During Burn:	873	deg. C

Note

Were Test Conditions Within Compliance?	Yes
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Yarmouth Research and Technology, LLC

Post-Burn Seat Test Information

Customer: ValvTechnologies Inc.

Date: 7/21/2011

Product Code: 6 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
13:37:16	30	36
13:37:31	30	36
13:37:46	30	36
13:38:01	30	37
13:38:16	30	36
13:38:31	30	36
13:38:46	30	37
13:39:01	30	37
13:39:16	31	37
13:39:31	31	37
13:39:46	31	37
13:40:01	31	37
13:40:16	31	36
13:40:31	31	36
13:40:46	32	37
13:41:01	31	36
13:41:16	31	36
13:41:31	31	37
13:41:46	31	36
13:42:01	31	36
13:42:16	31	36

Total Seat Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	240	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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Yarmouth Research and Technology, LLC

Operational Test Information

Customer: ValvTechnologies Inc.

Date: 7/21/2011

Product Code: 6 inch Class 600 Full Port Ball Valve

Project Number: PN211088

Test Data

Time	Pressure (psig)	Cal Block Temp - C
13:51:08	1102	34
13:51:23	1102	34
13:51:38	1099	35
13:51:53	1101	35
13:52:08	1101	34
13:52:23	1101	34
13:52:38	1101	34
13:52:53	1098	34
13:53:08	1100	34
13:53:23	1100	34
13:53:38	1099	34
13:53:53	1100	34
13:54:08	1099	34
13:54:23	1100	34
13:54:38	1100	34
13:54:53	1101	33
13:55:08	1099	34
13:55:23	1100	34
13:55:38	1098	34
13:55:53	1097	34
13:56:08	1098	34

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	150	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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